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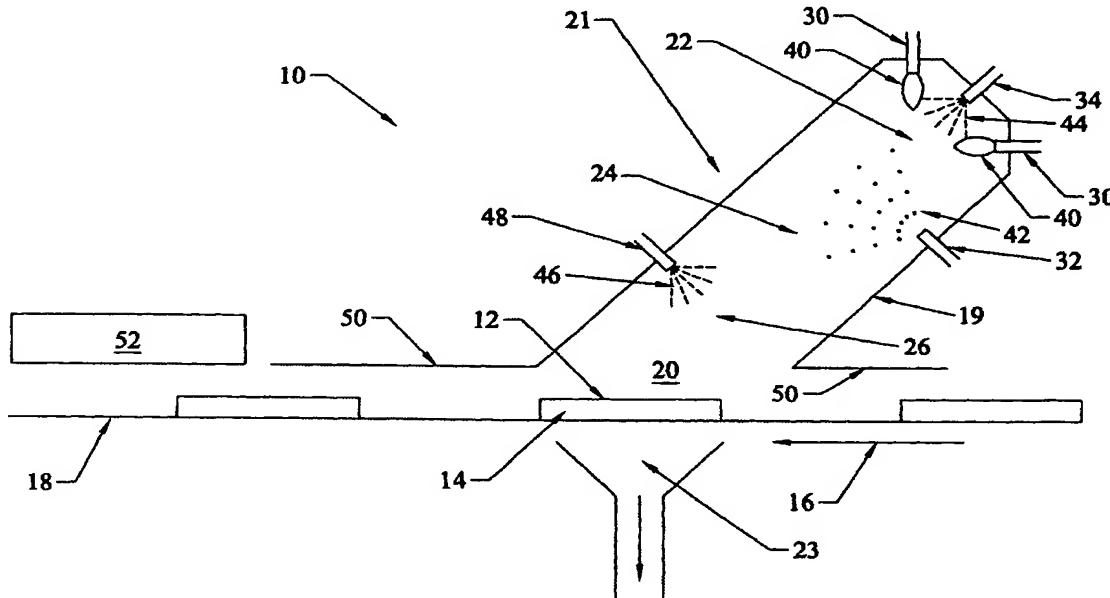
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**(54) Title:** FUEL CELL MEMBRANES AND CATALYTIC LAYERS



**(57) Abstract:** To form an ionomer-based catalytic layer on a porous substrate, a heat source (40) is used to dry an ionomer-containing spray (46) so that it does not substantially liquid flow on the substrate (14). The ionomer spray (46) may contain a catalyst. A spray (46) of mixed material for forming the catalytic layer is entrained by a gas stream and is heated and directed to a substrate surface (12). For hydrogen/oxygen fuel cells, catalytic material is incorporated into the proton-conducting membrane (56) to convert diffusing oxygen and hydrogen to water to reduce potential loss at the electrodes and maintain hydration of the proton-conducting membrane (56).

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